RODENT CONTROL IN NO-TILL

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In recent years, rodents in no-till corn and soybeans have become more of a concern in Indiana, due to changes in tillage systems for soil erosion control and due to an increase in buffer strips, field borders and designated wildlife areas. The pest of most concern is the meadow vole (*M. ochragaster*), which resembles a common mouse with a shortened tail. Although other rodents may also contribute to stand losses, their effects are minimal at best.

Voles are active feeders that need vegetation for food year round, day and night. Their favorite habitats are usually highly vegetated areas on dry ridges in the rolling terrain of a field. Networking trails, or runways, are easily seen going from vole colonies to surrounding areas where voles can actively feed. A colony's range can be up to ¼ acre in many cases.

Voles are most common in areas with increased cover, which limits their detection by predators such as hawks, owls, foxes, coyotes, snakes, etc as well as providing vegetation for their diet. Tillage is a very effective method for controlling colonies since it destroys the needed lush vegetation while physically disrupting or killing the colonies present. Due to the rolling areas where colonies are usually found, however, maintaining plant and residue cover is often needed to reduce soil erosion.

Research by Dr. Ron Hines, University of Illinois - Dixon Springs, has found that of all the control methods available to control vole populations, "habitat modification" seems to be the most effective, lowest cost, easiest to complete and safest on the environment. If borders, waterways, buffer strips or other vegetated areas exist, they should be mowed or harvested in late summer or fall to reduce both food and shelter for vole populations. For vegetation within the cropping areas, no-till early preplant herbicides should be considered to also reduce succulent food and shelter for voles. Remember, however, that for the most part reducing the vegetation in both cases doesn't physically kill the rodents. Modification merely causes them to move from the location being modified, and they may cause problems in adjacent fields.

Another control method is the use of alternative baits. Voles will significantly reduce corn or soybean stands only during the first 21 to 28 days after planting, when the voles will actually dig up newly planted seeds or eat succulent plant tips emerging from the ground.

Use of alternative baits gives the voles something to eat until the seedlings have emerged and are beyond their reach (usually about 6"-12"), at which time the damage to the plants is fairly limited. Use of 4 bushels of cracked corn, 2 bushels of soybeans, 2 bushels of wheat or rye, or 2 bushels of whole corn are all possible forms of diversion to keep voles from feeding on emerging crops.

As with modifying habitat, however, such control only keeps voles from feeding by providing something more easily eaten, and doesn't actually kill the rodents. Alternative baits have been found by the University of Illinois to provide control comparable with commercial chemical controls such as zinc phosphide, and can usually be spread with the commercial fertilizer applications. Vegetation should be dry during spreading to prevent bait from sticking to plants, and grain for bait should be from a weed-free source.

Another source of control is the use of zinc phosphide pellets applied in row with no-till corn (zinc phosphide is currently not labeled for use in soybeans). Application rates are from 4-6 pounds per acre, with a 6 pound rate recommended by U of Ill. in areas of high colony populations such as vegetated knolls in crop fields. With proper scouting only heavily infested areas and/or border areas of the field may need to be treated at planting, saving on costs and chemical. Pelletized zinc phosphide is currently the only product available for no-till corn that reduces rodent damage by killing the voles after ingestion.

A recommended control program would be:

- Mow or burn fields and border areas in late fall to expose rodents to predators and reduce overwintering populations. Fall herbicide applications are not recommended on rolling fields due to erosion concerns during the winter and early spring.

- Check fields in late March for active vole colonies to determine the populations' potential

- If more than 5 active colonies per acre are found in late March, plan a control prevention program.

- If early preplant (EPP) herbicides are being used, apply at least 21 to 30 days before planting to reduce rodent cover and food sources.

- If alternative baits are used, apply bait mixed with dry fertilizer (to save on trips across the field) within two days prior to planting. Apply bait when vegetation is dry to insure that it will fall to the ground for voles to eat, and not stick to the surrounding weeds and vegetation.

- For ***no-till corn***, scout again for active vole colonies about 1 week before planting. If few to none are found, plant when conditions are ready with no addition of zinc phosphide. If more than 5 active colonies per acre are found, plan to apply either zinc phosphide or an alternative bait, such as cracked corn, soybeans or wheat.

- For ***no-till soybeans***, scout again for active vole colonies about 1 week before planting. If more than 5 active colonies per acre are present, drilled soybeans are preferred over row soybeans. Drilling literally kills more voles by simply having additional knives in the ground, and drilling the soybeans causes the rodents to eat on several plants at random locations instead of entire rows of plants in a row system, leaving critical gaps in plant canopy. The additional application of 1 bushel of soybeans across the soil surface as alternative bait also can considerably increase yields. *Zinc phosphide is currently labeled only for corn, and not available for soybean use.*

(KJEck - 4/22/2002)